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Retrospective analysis of multiple sclerosis treatment profile and patterns in the Brazilian public health system

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Introduction

- Multiple sclerosis (MS) is a chronic autoimmune disease characterized by inflammation of the central nervous system that leads to demyelination, axonal loss and progressive neuronal degeneration. (1,2)
- MS progression results in irreversible disability and cognitive impairment. (1,2)
- Approximately 85% of patients with MS are initially diagnosed with relapsing–remitting MS (RRMS). (1,3–5)
- RRMS is characterized by clearly defined episodes of neurological symptoms (relapses), which are followed by recovery periods (remissions) during which symptoms mostly improve. (6)
- There is no cure for MS but disease-modifying therapies (DMTs) aim to slow disability progression and reduce the number and severity of relapses. (7)
- Brazilian Public Health System (SUS) approved a new treatment protocol for RRMS, which include injectable, subcutaneous and oral therapies. (5)

Objective

- This study aims to report treatment patterns of RRMS in the SUS.

Methods

- Retrospective analysis of the frequency of RRMS treatment sequence, number of RRMS treatment switch per patient and the time between switches was developed as reported in Ambulatory Information System (SIA/SUS) database, from October/2011 to July/2018.
- A drug survival analysis was performed to compare the time of the first treatment switch or interruption. The Cox proportional-hazards model was used, and the Kaplan-Meier survival curves and their hazard ratios were estimated.
- Only patients who started with first line therapy, according to Brazilian guideline, were considered.

Results

In the period analyzed (October/2011 to July/2018), 633 different RRMS treatment sequences were found including interferon-β (IFN-β) 1a or 1b, glatiramer acetate (GLA) 20 mg, fingolimod and natalizumab. GLA 40 mg, teriflunomide and dimethyl fumarate were not available in the database at the data cutoff.

IFN-β 1a 30 mcg-GLA was the most common (6.34%) treatment sequence, followed by switch between IFN-β 1a 22 mcg and IFN-β 1a 44 mcg (5.83%), GLA-natalizumab (5.56%) and GLA-fingolimod (5.45%).

The number of switches per patients showed that 26.1% switched only once, 9.3% had two switches, 3.3% three switches, 2.3% four switches or more and the other 59.1% did not switch at any time. On average, patients switched 1.6 times (excluding patients without any switches).

Considering the first switch, ≥ 40% of the patients who were treated with IFN-β 1a 44 mcg, IFN-β 1a 30 mcg and IFN-β 1b 300 mcg switched to GLA, while 63.5% of the patients who were using IFN-β 1a 22 mcg switched to IFN-β 1a 44 mcg. Among patients who were using GLA, 32.2% switched to natalizumab and 26.2% to fingolimod (Figure 1).

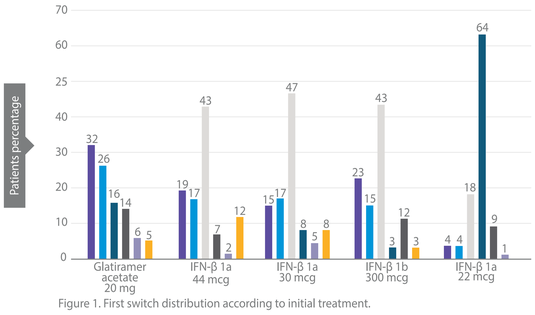

Figure 1. First switch distribution according to initial treatment.

Regarding the second switch, most patients using natalizumab (59.7%) switched to fingolimod. Switch to natalizumab was the most frequent in patients using fingolimod (53.2%) and GLA (41.7%) (Figure 2).

The mean time to the second treatment was 24.7 months (SD: 19.7), with the shortest time for IFN-β 1a 22 mcg (16.8 months). For the subsequent treatments, the time to the next drug was always shorter than the previous.

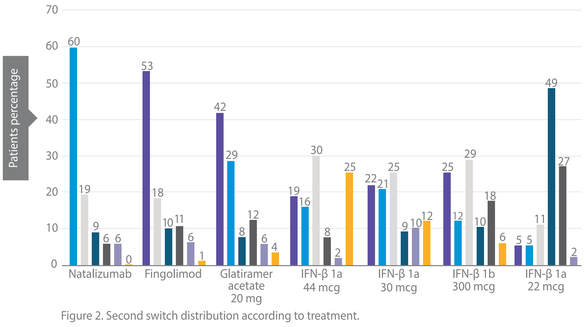

Figure 2. Second switch distribution according to treatment.

The Kaplan-Meier survival curve of platform therapies showed that all drugs had a similar risk of switch or interruption, except for IFN-β 1a 22 mcg, which showed a statistically significant higher risk in all comparisons (Figure 3). Compared to IFN-β 1a 22 mcg, hazard ratios ranged from 0.88 (GLA) to 0.71 (IFN-β 1a 30 mcg).

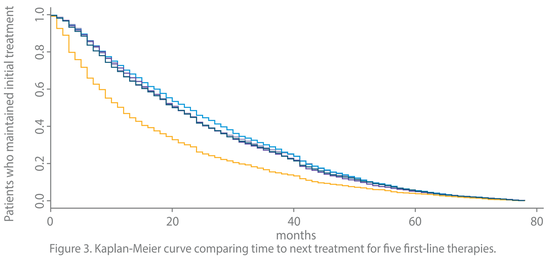

Figure 3. Kaplan-Meier curve comparing time to next treatment for five first-line therapies.

Conclusions

- Data from SUS showed the switch profile of RRMS treatment considering IFN-β 1a or 1b, GLA, fingolimod and natalizumab.
- Initial therapy survival was similar for all drugs, except for IFN-β 1a 22 mcg.

References

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